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Via Electronic Mail

June 5, 2014

Kelly Susewind
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Re: Groundwater Monitoring in WA CAFO General Permit

Dear Kelly,

We are writing to formally ask that Ecology include groundwater monitoring as a mandatory condition in the new Washington CAFO General NPDES/State Discharge Permit that your agency is currently developing. As you know, groundwater monitoring is the only way to obtain information necessary to protect groundwater resources in accordance with state law. Therefore, it is imperative that groundwater monitoring be a mandatory condition in the WA CAFO General Permit. After we discovered that a version of the draft permit had been leaked to the Washington State Dairy Federation but had been withheld from us as well as other members of the public and tribal governments, we submitted another public records request and were provided a copy of a draft permit dated January 2014. As you can imagine, it is appalling to see that groundwater monitoring is not a part of the latest iteration of the draft permit. To use the words of Ecology Regional Director Tom Tebb, the most recent draft again "kicks the can down the road" on this issue, which allows medium and large CAFOs to degrade the precious groundwater resources in this state.[1] I hope you agree that such continuing abdication of responsibility on the part of Ecology is unacceptable.

[1] In an April 24, 2009 email to Ecology and Agriculture staff, including yourself, Mr. Tebb said: "Furthermore, I don't really have a good sense or understanding on where we are headed (as a state and agency) with the lower Valley Groundwater nitrate problem other than to kick the can down the road more. This one is tough for me because it seems like 4 years ago all over . . . when we acknowledged we had a problem but due to priorities chose not to do anything." (Attachment 1).

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The law is clear that Ecology has the obligation "to maintain the highest quality of the state's groundwater's and protect existing and future beneficial uses of the groundwater through the reduction or elimination of the discharge of contaminants to the state's groundwaters." WAC 173-200-010(4). Given the documented extent of groundwater contamination from CAFOs in the state of Washington, it is illegal, unethical and immoral for Ecology to stand idly by while this rampant pollution continues unabated. Given your background in solid waste management and landfills, we hope that you are able to see the absurdity of having a stringent regulatory regime in place for the management of other solid wastes, *see, e.g.,* WAC 173-304-490 (groundwater monitoring requirements for solid waste handling), while animal waste can simply be placed in a hole in the ground. Is this really the best that we can do? Digging a hole in the ground can hardly be considered "all known and reasonable available technology." WAC 173-200-050. The absurdity, and illegality, of the different regulatory treatment for animal waste is made all the more apparent by the fact that, according to Tom Tebb, dairy manure stored in a lagoon is stronger and has more contaminants than human waste, which is more strictly regulated than animal waste.[2]

Groundwater monitoring must be included in the Washington CAFO Permit because **all lagoons leak**. It is a simple principle of physics, known as Darcy's Law, that describes the flow of a fluid through a porous medium and confirms that all lagoons leak. Indeed, every study that the Washington Department of Ecology has ever conducted on CAFO lagoons illustrate the principle of Darcy's Law that all lagoons leak. As Tom Tebb, a licensed engineering geologist, geologist, and hydrogeologist, has confirmed: "A lagoon built on earth, if not properly constructed, would leak."[3] Mr. Tebb also recognized that even manure lagoons constructed with a synthetic liner (there is one such lagoon in this state) would leak into the groundwater.[4] When lagoons leak, the highly toxic animal excreta that is contained within the lagoons discharges into the ground water and drinking water resources of this state. If you monitor the groundwater down-gradient of CAFO lagoons, you will find contamination. Countless studies, and courts of law, have confirmed that incontrovertible fact. Therefore, because all CAFOs are discharging directly to groundwater via lagoon leakage, they *all* must be subject to the WA CAFO General Permit and be required to conduct groundwater monitoring. Groundwater monitoring is the only way to show the extent of lagoon leakage and the extent of manure over-application that is causing groundwater contamination.

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[2] *CARE, et al. v. Cow Palace, et al.*, Nos. CV-13-3016-TOR; CV-13-3017-TOR (E.D. WA) (Deposition of Thomas Tebb) (February 26, 2014) at 26-27 (Attachment 2).
[3] *Id.* at 41.
[4] *Id.*

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EPA has confirmed that all CAFO lagoons leak. In a September 2012 study, EPA concluded that "[e]ach of these [CAFO] case study sites exhibited ground water contamination by nitrate and/or ammonium. For most sites, this resulted directly from the operation, either through leaking infrastructure piping, *leaking lagoons*, or land application of CAFO waste, as supported through the monitoring of stable nitrogen isotopes."[5] Another study "has definitively shown that leakage from the manure lagoons is manifested in the shallow aquifer geochemistry at the dairy site."[6] Your own Ecology staff determined that "[l]agoon leakage studies previously conducted by Ecology identify ground water contamination in areas where there are direct discharges to ground water."[7] Ecology found that "[a] lagoon constructed below the seasonal high ground water table is essentially a direct discharge to ground water. The liquid contained in a dairy lagoon is untreated manure. Ecology does not allow the direct discharge of contaminated wastewater or highly treated wastewater into ground water for other activities."[8] Similarly, "[m]anure stored on gravelly soil or shallow, cracked bedrock can pollute groundwater."[9] As early as 1994, Ecology hydrogeologist Dennis Erickson found that leakage from manure storage lagoons affected ground water quality at dairy facilities in Whatcom and Yakima Counties.[10] "Near-field monitoring at Edaleen Dairy shows that lagoon leakage is contaminating ground water in the immediate vicinity of Edaleen lagoon. Far-field monitoring indicates that agricultural activities, including land application of dairy waste, are contributing nitrate contamination to shallow ground water."[11] Ecology monitored ground water quality for one year at a new dairy lagoon in Yakima County. Ecology again found that "chloride concentrations in all wells downgradient of the main lagoon increased after the second and third quarters of monitoring (between four and ten months after the main lagoon received wastewater) probably

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[5] EPA, Office of Research & Development, National Risk Management Research Laboratory, Ada, Oklahoma, EPA 600/R-12/052, Case Studies on the Impact of Concentrated Animal Feeding Operations (CAFOs) on Ground Water Quality (September 2012) (emphasis added).
[6] W.W. McNab, M.J. Singleton, J.E. Moran, & B.K. Esser, Environmental Science and Technology, Assessing the Impact of Animal Waste Lagoon Seepage on the Geochemistry of an Underlying Shallow Aquifer (March 8, 2006).
[7] Melanie Kimsey, Ecology Issue Paper, Construction of Dairy Lagoons Below the Seasonal High Ground Water Table (January 18, 2002).
[8] *Id.* at 3.
[9] Ron Fleming, Jennica Johnston, Heather Fraser, Leaking of Liquid Manure Storages – Literature Review (July 1999).
[10] Denis Erickson, Ecology, Effects of Leakage from Four Dairy Waste Storage Ponds on Groundwater Quality (June 1994).
[11] Garland, D. and D. Erickson, Ecology, publication No. 94-37, Ground Water Quality Survey Near Edaleen Dairy, Whatcom County, WA January 1990-April 1993 (April 1994).

due to leakage from the lagoon."[12] In June 1992, Ecology summarized its findings after monitoring ground water quality for one year at a 12-year-old dairy lagoon in Whatcom County. "In downgradient wells, TSS, chemical oxygen demand, total organic carbon, ammonia-N, total P and chloride consistently exceeded upgradient concentrations, probably due to leakage from the lagoon."[13] Please do not disregard what the science confirms to be true: all lagoons leak.

The data that is being collected by EPA consultants as part of the Safe Drinking Water Act Administrative Order of Consent ("AOC") in the Lower Yakima Valley illustrates the immediate need for groundwater monitoring as part of the WA CAFO Permit. Deep soil samples required to be taken pursuant to the AOC confirm that, in the words of the dairies' own experts, "residual nitrates are excessive" and are present not only in the top foot, but also three feet below ground surface where the crops can no longer effectively uptake the nitrogen.[14] These excessive nitrates have only one place to go, given their mobility in the soil: straight to groundwater. The AOC data further confirm EPA's conclusions in its 2012 study that the CAFO dairies are by far the largest contributor to nitrate contamination in the lower Yakima Valley. The groundwater monitoring results for two sets of quarterly tests in 2013 consistently detect nitrates far in excess of Safe Drinking Water Act public health standards.[15] This contamination is putting the community at serious risk. Had these dairies been required to be covered by a WA CAFO General Permit with a groundwater monitoring component years ago (none of them are currently covered by a discharge permit of any kind), this contamination would have been detected and steps could have been put in place to protect public health and the environment.

The consequences of issuing a new CAFO permit without groundwater monitoring are unfathomable given the fact that so many Washington residents depend upon groundwater as their main source of drinking water. Currently over 65% of Washingtonians get their drinking

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[12] Denis Erickson, Ecology, publication no. 92-e23, Ground Water Quality Assessment, Hornby Dairy Lagoon, Sunnyside, WA (March 1993).

[13] Denis Erickson, Ecology Publication No. 92-e25, Ground Water Quality Assessment, Whatcom County Dairy Lagoon #2, Lynden, WA (June 1992).

[14] Agrimanagement Fertility Report (Field GDS-SU-05 at George DeRuyter & Sons Dairy showed levels of nitrates at 263 ppm at one foot depth, 254 ppm at two feet, and 263 ppm at three feet) (October 9, 2013) (Attachment 3).

[15] ARCADIS, Draft Yakima Valley Dairies Quarterly Groundwater Monitoring Data Report (4th Quarter 2013), SDWA-10-2013-0080 at 18 ("Nitrate was detected in 16 [of 25] wells at concentrations greater than 10 mg/L").

water from groundwater.[16] Approximately 725,000 Washingtonians get their drinking water from individual private wells.[17] The vast majority of these people have no clue that their drinking water is potentially contaminated with nitrates and other contaminants from CAFOs. When groundwater monitoring is done, the extent of the contamination becomes readily apparent. On March 6, 2014, Arcadis reported that 48% of drinking water samples from residences near the dairies exceeded the maximum contaminant level of 10 mg/L for nitrate.[18] In the Sumas-Blaine Aquifer in Whatcom County, your agency found that 44% of the wells sampled contained nitrate concentrations exceeding the drinking water standard of 10 mg/L.[19] At Faria Dairy in Royal City, Washington, Judge Suko of the Eastern District of Washington concluded that "Faria's manure management practices are the predominant source of the nitrate contamination found in the [groundwater] monitoring wells and correspondingly, local groundwater. These practices include consistent over-application of manure to fields located adjacent to, and nearby, the Dairy."[20] Groundwater monitoring has also detected contamination in the aquifer underlying Wilcox Farms, a large chicken CAFO in Roy, Washington. According to Ecology Hydrogeologist John Storman: "I have reviewed the Wilcox Farms submitted Ground Water Monitoring DMRs through the end of 2012 along with the 2012 CAFO NMP Annual Report for Wilcox Farms, Roy, WA. These show a disturbing increase in the Nitrogen and TDS groundwater contaminant levels in some wells monitored at this facility from 2009-2012. The increases suggest that Wilcox needs to improve their nutrient management and applications."[21] And that is just the tip of the iceberg. How much more groundwater contamination data needs to be brought forth for Ecology to act to protect groundwater resources as they are currently required to do by law?

We are not alone in advocating that groundwater monitoring is the only effective way to gather information necessary to protect groundwater resources. As your own staff concluded as

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[16] Ecology, Strategic Recommendations for Groundwater Assessment Efforts of the Environmental Assessment Program, available at https://fortress.wa.gov/ecy/publications/publications/0303009.pdf (last visited May 19, 2014).
[17] WA Department of Health, The Office of Drinking Water (Overview), available at http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/TheOfficeofDrinkingWater.aspx (last visited May 19, 2014).
[18] Arcadis, Yakima Valley Dairies, Provision of Water, Residential Well Sampling Report, AOC, SDWA 10-2013-0080 (March 6, 2014).
[19] Melanie Redding, Annual Report, Sumas Baine Aquifer Long Term Groundwater Quality Monitoring Network (2011).
[20] *CARE v. Faria Dairy*, 2011 WL 6934707 (E.D. Wa. Dec. 30, 2011).
[21] Ecology Technical Memo From John Stormon re: Wilcox Farms Increasing Groundwater Contaminant Levels and Concern About Nutrient Applications (May 6, 2013).

part of the nitrate studies in the Sumas-Blaine Aquifer in Whatcom County: "Two methods for estimating the nitrogen residual at the end of the growing season, mass balance analysis and post-harvest soil nitrate testing, were not reliable predictors of nitrate concentrations in groundwater. *Direct monitoring of water quality at the water table was the only accurate and reliable method for tracking efforts of manure management on groundwater nitrate.*"[22] The EPA has advised your agency "the state should impose groundwater-monitoring requirements on large livestock operations that are potential significant sources of nitrates to a drinking water aquifer. The specific monitoring system should be designed by a licensed hydrogeologist and include both upgradient and downgradient monitoring."[23] The Washington Department of Health has also recommended groundwater monitoring in recommendations made to the Governor in 2012: "Ensure groundwater sampling around animal operations. This would not only help to [protect] public water systems, but private well owners as well."[24] Please accept and implement the recommendations of your staff and these agencies and include groundwater monitoring in the next iteration of the WA CAFO Permit.

We understand that there may be political consequences associated with your decision to require groundwater monitoring in the WA CAFO General Permit. But politics should not override your legal and moral responsibility to protect the groundwater of this state and the health and wellbeing of those Washingtonians who depend upon groundwater as their sole source of drinking water. Please let us know the status of the draft permit and expected public release date and what else we can do to ensure that groundwater monitoring is required in the new CAFO Permit. We would appreciate if we could set up a time to talk with you about these issues over the telephone. Please let us know when you would be available.

Sincerely,

Andrea K. Rodgers, Of Counsel, Western Environmental Law Center
Charles M. Tebbutt, Law Offices of Charles M. Tebbutt

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[22] Ecology, Nitrogen Dynamics at a Manured Grass Field Overlying the Sumas-Blaine Aquifer in Whatcom County (March 2014).
[23] Letter from Dennis McLerran (EPA Regional Administrator) to Ted Surdevant (Ecology Director) and Dan Newhouse (Agriculture Director) (December 4, 2012) (Attachment 4).
[24] WA Department of Health, Governor Briefing on Ag/Dairy Waste Issues in the Royal City & Sequim Areas (September 17, 2012) (Attachment 5).